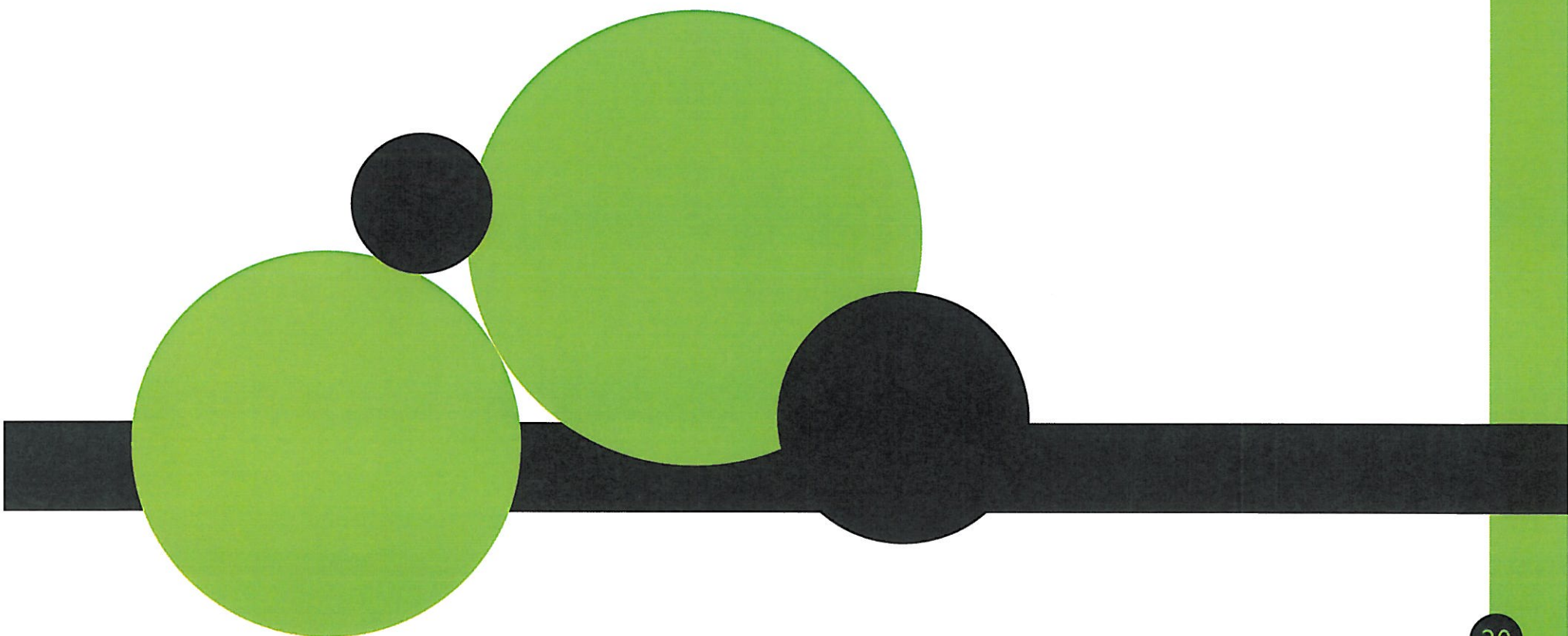


## TRANSPORTATION





The transportation system represents a key component of the Germantown Smart Growth Plan. The existing system presents a number of challenges to the City's goals of creating an attractive, walkable downtown. Therefore, the plan proposes significant modifications and enhancements to increase the system's overall function and the City's vitality. This section gives an overview of the existing transportation system and highlight targeted improvements. It is adapted from a technical memo prepared by Kinley-Horn & Associates.

### Roadway Network

Within the study area, traffic along Poplar Avenue (U. S. 72 / State Route 57) dominates east-west vehicular movement while north-south traffic flow concentrates on the Germantown Road / West Farmington-West Street / Germantown Road South system (State Route 177). Poplar Avenue is the major link from the City of Germantown and the Town of Collierville to the City of Memphis and Interstates 240 and 40. These major arterial roadways serve as critical links within the regional roadway network, as evidenced by the following Average Daily Traffic (ADT) volumes (2004) within the study area:

Major Thoroughfares Traffic Volumes	
Roadway	Vehicles Per Day
Poplar Avenue	39,000
Germantown Road (North of Neshoba Road)	56,100
Germantown Road (Neshoba to Farmington)	60,700
Germantown Road (Farmington to Poplar Avenue)	41,200

Unfortunately, little to no residential or minor street network exists within the study area. The local street network primarily serves adjoining residential neighborhoods *outside* the immediate study area. Therefore, the unbalanced network forces the major arterials and collectors to carry both local traffic as well as commuter traffic. When burdened in this manner, these roadways actually work against the transportation system's overall efficiency. The large, heavily-trafficked roadways become difficult to cross, isolating city blocks and neighborhoods from easy access to one another. Examples in the study area include the Saddle Creek North and Germantown Hardware blocks.

This arrangement becomes especially problematic during the morning and afternoon rush hours, where traffic flow remains highly directional based upon time of day. In the morning peak hours, Poplar Avenue carries the majority of vehicles westbound towards Memphis. The ADT figures for the study area's other

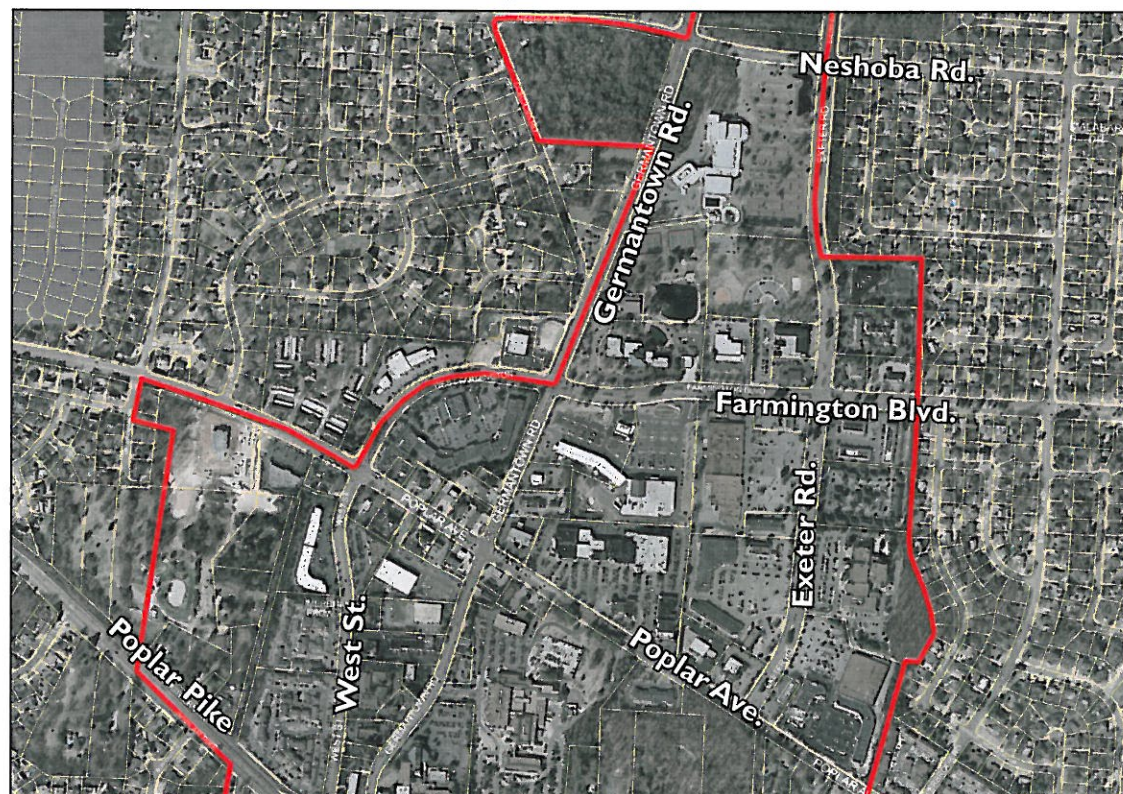
collector roads reflect this pattern, as Germantown/West/Exeter/Neshoba/West Farmington all direct traffic south and west. In the evening the cycle reverses, with north/eastbound flows snarling traffic.

Particularly problematic, the West Street-Germantown Road split creates significant delays that impact flow throughout the area, especially below Poplar Avenue, where Germantown Road absorbs the volume of two full collectors. This situation exacerbates conditions on surrounding roads, especially at the intersection of Poplar Avenue and Germantown Road. With a lack of alternatives, conditions on the entire roadway network continue to worsen.

Not surprisingly, the West Farmington Boulevard, West Street and Germantown Road intersections with Poplar Avenue contain the highest traffic volumes. Compounded by intensive turning

movements, the ability of these intersections to handle commuter traffic impacts the entire study area. Due to the lack of other north-south or east-west through routes, all traffic must be served by either of these two intersections.

Other Roadway Traffic Volumes	
Roadway	Vehicles Per Day
Neshoba Road	4,000
Exeter Road	11,900
West Farmington Boulevard	14,400
Poplar Pike	6,600
Dogwood Road	7,800
West Street	18,400



Major & minor thoroughfares in the Study Area



## Level of Service

To gauge capacity, engineers use a performance indicator known as Level of Service (LOS), which provides a qualitative measure of the operating conditions and traffic flow for a given road segment. Letter designations range from A (free-flow operations with minimal delays) to F (extreme congestion and long delays). For signalized intersections, LOS is determined by the signal control's average stopped delay for vehicles. On unsignalized intersections, delay caused by waiting for gaps in counter-movement traffic reflects the LOS. The table to the right lists the existing LOS conditions of intersections within the study area for the AM and PM peak hour periods using 2003 traffic volumes.

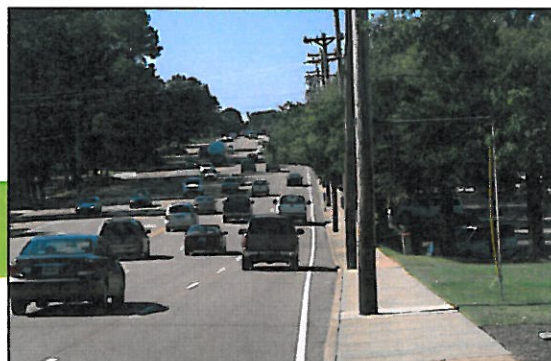
## Rail Infrastructure

The Norfolk-Southern railroad represents another component of the study area's transportation infrastructure. Running parallel to Poplar Pike, service along this line has increased exponentially over the past several years, with the number of trains a day approaching two per hour at certain times. The two at-grade rail crossings (West Street/Poplar Pike and Germantown Road/Southern Avenue) prove particularly problematic as they inhibit north-south traffic movement during train crossings. Ultimately, these crossings disrupt traffic patterns and flow throughout the entire study area.

The Memphis Area Transit Authority completed a Regional Transit Plan in 1997 that identified three potential corridors for light rail service. Among these, the plan envisions a "Southeast Corridor" to run out to the suburbs southeast of downtown Memphis and outside of I-240. The Norfolk-Southern railroad line, which cuts through the Germantown's center, is a prime candidate. Much needs to be done in order for this vision to be realized. Namely, arrangements would need to be made between Norfolk-Southern, MATA, Germantown, and other municipalities along the potential corridor to plan and administer the service. Benefits of the commuter rail line include: new, transit-oriented development opportunities (retail, commercial, and residential); improved air quality; decreased traffic congestion (and reduced commuting times); greater mobility and access to destinations throughout the region.

## Existing Intersection Network Level of Service

Intersection	Traffic Operation	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec.)	LOS	Delay (sec.)
Germantown Road & (West) Farmington Boulevard	Signalized	E	71.1	F	117.3
Exeter Road & Farmington Boulevard	Signalized	B	14.4	C	27.3
Exeter Road & Poplar Avenue	Signalized	B	14.8	B	17.7
Germantown Road & Poplar Avenue	Signalized	C	33.3	F	93.3
West Farmington Boulevard/West Street & Poplar Avenue	Signalized	D	47.8	E	75.6
West Street North Street & Poplar Avenue	Signalized	C	21.9	B	18.9



Mid-day traffic on the heavily traveled US 72 (Poplar Avenue)



A pedestrian attempts to cross the busy Germantown Rd.-Poplar Ave. intersection



## Bicycle and Pedestrian Network

Within the study area, high motor vehicle volumes and limited options for non-motorized travel restrict bicycle and pedestrian movements. Where pedestrian facilities do exist, sidewalks are often placed next to major vehicular corridors without a planting strip between, thus diminishing the appeal and comfort of walking. Poplar Avenue and Germantown Road represent the two most glaring examples of this condition; however, the same can be said about almost every roadway in the study area.

Perhaps most unfortunate, many destinations within the study area are only a short 5-10 minute walk or bike ride apart. As the map to the right shows, a ten minute walk covers the entire study area. In this diagram, two sets of radii emanate from two of the most important destinations in the area: the Municipal Block and Germantown Methodist Hospital. The inner lines represent a 1/4 mile, or a five minute walk, while the outer lines depict a 1/2 mile ring, or a 10 minute walk. Where the two sets overlap, a red "energy zone" depicts the area in which walkability proves most feasible given an appropriately designed context (i.e. attractive streets with sidewalks, shops, and destinations).

Because the City's commercial center already contains some restaurants, commercial/office centers, and major employers, there exists a strong potential to create an environment conducive to improved and safer pedestrian and bicycle mobility within the study area. In fact, numerous citizens described current conditions as "not pedestrian-friendly" and "very dangerous!" Seniors, which represent a rapidly growing population segment, were especially concerned for their safety and mobility in Germantown. Major gaps in the transportation system, which make it difficult to access destinations in the City without a car, create these sentiments. At intersections along Poplar, Germantown, and West roadways, pedestrian signals fail to provide enough time for a safe crossing of the street (usually

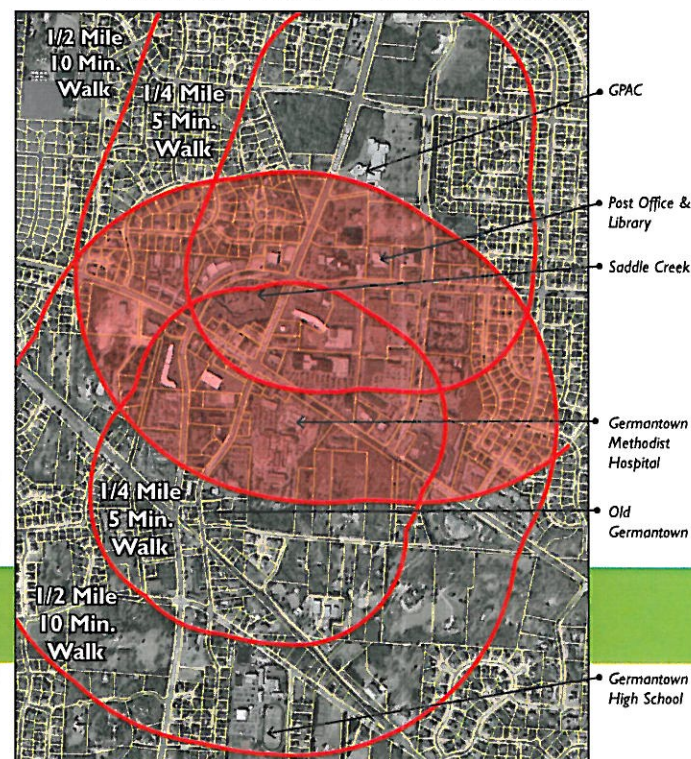
5-7 lanes, or 72+ feet). By comparison, the average person walks at a rate of 3.3 feet per second, meaning that a safe crossing necessitates at least 14 seconds. When charrette participants toured the area by foot, many of the signals timed out at 3-6 seconds. This places the pedestrian in a precarious situation and forces them to race (if able) across the intersection. Many citizens stated that "better pedestrian crossings" were needed. Poorly distinguished crosswalk markings and planted medians that directly inhibit pedestrian movement (top right and below) add to the dangers of walking in Germantown. As the images show, pedestrians take their life into their own hands when they choose to cross at these inadequate junctions. During the charrette, the consultant witnessed a wheelchair-bound person nearly struck by an oncoming vehicle as she attempted to cross an intersection.

From a bicyclist's perspective, the area is equally challenged. While some bike lanes exist in neighborhoods adjacent to the study area, the City's downtown lacks adequate wayfinding signs and designated lanes/paths. Citizens at the charrette labeled this a top priority. Unfortunately, roadways inhospitable to bicyclists surround many attractions, such as the City's municipal park. These multi-lane roadways are often over-built and over-sized, serving half of their designed volume while isolating each block and making pedestrian/bicycle access difficult.

Not only do these circumstances impede non-motorized movement, but they further exacerbate traffic problems. For instance, employees of Germantown Methodist Hospital that order lunch from McAlister's Deli across the street must get in a car to cross the heavily-trafficked Poplar Avenue because no crosswalk exists. This action places yet another vehicle on the busy roadway, increasing the risk of crashes and unnecessarily clogging the thoroughfare.



Inadequate pedestrian facilities make walking hazardous near the Post Office



A 10 minute walk separates most destinations downtown



Landscaping obstruction of crosswalk on Farmington



Existing sidewalk conditions on Poplar Avenue



## PROPOSED IMPROVEMENTS

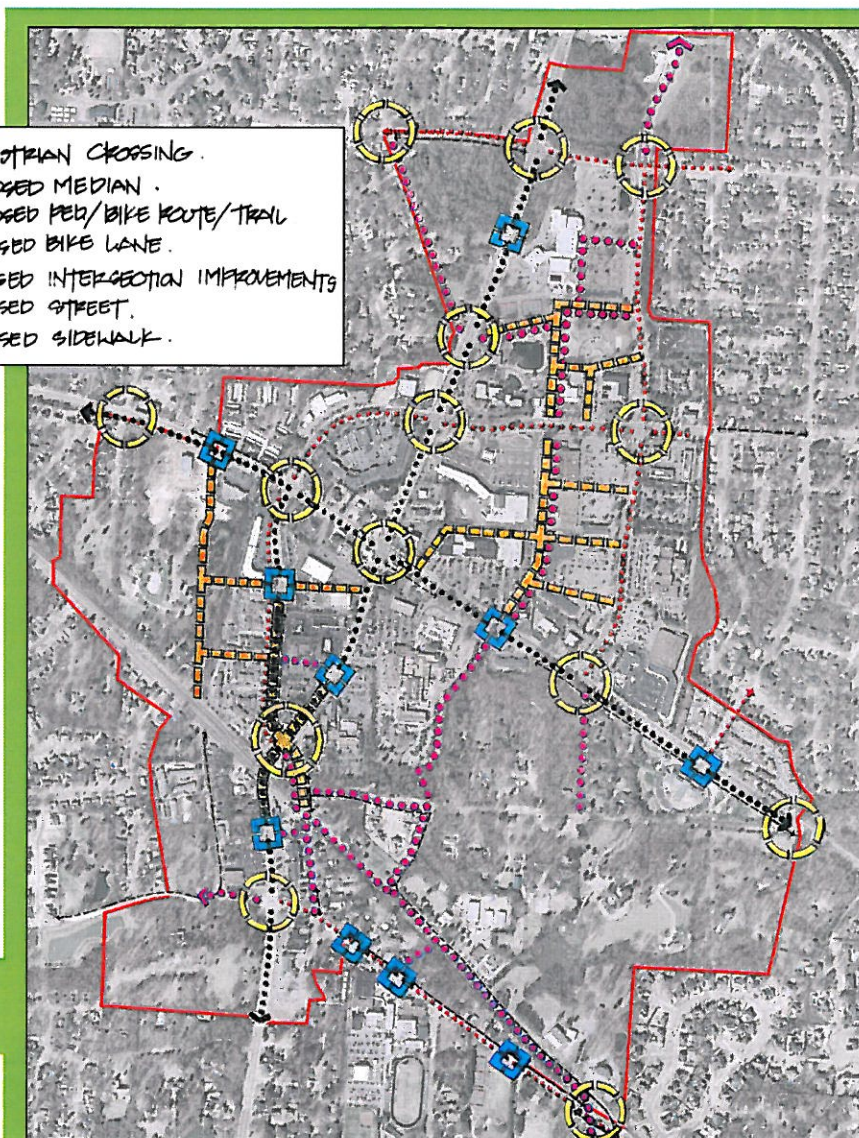
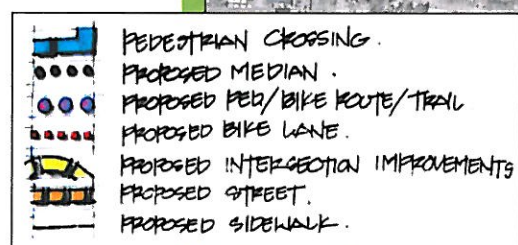
The ideas discussed here reflect both short-term and long-term strategies to improve transportation conditions in Germantown. Implementation of these improvements will occur incrementally, with each element contributing to the transportation system's overall efficiency.

The map on this page illustrates an aggregate collection of many transportation improvements proposed by this plan. A major theme that emerged from the charrette was "connectivity." Perhaps more than any other feature, the transportation facilities map emphasizes connections at every level.

The orange blocks represent proposed new street connections. Each of the streets, the plan suggests, should contain adequate sidewalks and planting strips to enhance pedestrian safety and mobility throughout the study area. The blue squares indicate the need for improved pedestrian-specific crossing facilities. Yellow circles identify intersections requiring both vehicular (cars and bikes) and pedestrian improvements. Features such as curb-extensions, improved signalizations, and medians (symbolized by black dots in the map) will help to increase pedestrian and vehicular safety by clearly defining movements and protecting users waiting to cross or turn.

In addition, the plan proposes specific pathways for non-motorized movement in the study area. The red squares delineate bike-lanes to be included on roadways so that cars and bikes may safely share major streets. The purple dots depict exclusive pathways dedicated to non-motorized use or low-volume on-street bicycle routes. These facilities may also take the form of off-road trails or wide, multi-use paths that connect through neighborhoods, parks, commercial centers, and other key destinations around the City.

Overall, the following recommendations aim to create a coherent, multi-modal network of streets, sidewalks, and pathways that improves the entire transportation system's efficiency and enhances the experience for all users.



Transportation facilities improvements



## PROPOSED ROADWAY IMPROVEMENTS

Significant short-term improvements to the motor-vehicle transportation system are in progress under the guidance of the Tennessee Department of Transportation and Shelby County. The column below summarizes these efforts:

### TDOT and Shelby County Projects

Projects slated for completion within the next ten years:

- Germantown Road: 2 to 4 lane widening just south of study area.
- Poplar Avenue: Widening to 7 lanes east/west of study area, from Kirby Road in Memphis to Byhalia Road in Collierville.
- Poplar Pike: Expansion from to 4 and 5 lane cross-section in and east of the study area.
- Wolf River Boulevard: Completion provides a major east-west arterial immediately north of the study area, providing a viable alternative for commuters.

Additionally, the Shelby County Congestion Management Program plans to complete coordination of all existing signals in the study area, as well as three Poplar Avenue intersections to the west and several junctions to the study area's north and south. Together, these roadway improvements will increase capacity throughout Germantown, especially along the Poplar Avenue corridor, where experts predict a 5% decrease in traffic once TDOT implements these ancillary projects.

Lastly, improvements planned for the intersection of (West) Farmington Boulevard and Germantown Road include replacing the single eastbound left-turn lane with a double left. Plans also call for the intersection's southbound right-turn lane to become a free-flow movement with the construction of an exclusive merge lane for southbound right-turning traffic.

### Smart Growth Plan Proposed Roadway Improvements

In conjunction with these projects, the plan proposes the following recommendations to improve transportation conditions in the study area:

- **Connect Germantown Road with Germantown Road South immediately north of the railroad.** This proposal provides a direct north-south route through the City, thereby reducing congestion at other intersections caused by awkward turn movements. Overall, this realignment most significantly improves the

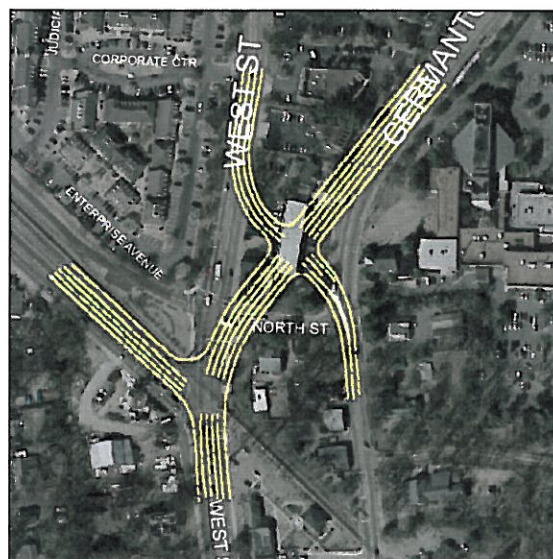


Illustration of Germantown Road re-alignment at North Street

capacity of area roadways.

- **Move State Route 177 designation to Germantown Road.** Coupled with the realignment mentioned above, this strategy properly arranges the study area's street hierarchy. In addition, it allows West Farmington and West Street roadways to take on a more local context, making these streets more favorable to pedestrians/cyclists.
- **Modify signal timings.** Presently, signal timings make turning left from Poplar Avenue to West Farmington a quicker option to access Germantown Road north than simply turning left at the next intersection. This movement, however, snarls traffic throughout the study area. Improving timing at the Germantown Road/Poplar Avenue intersection makes this a more attractive route. To improve overall traffic flow, the plan recommends coordinating all traffic signals on major roads.
- **Implement new cross-sections.** Many of the study area's other streets have traffic capacities that exceed their current or future needs. As the City adjusts its signal timing and route designation on major roads, even more streets will fall into this category. Therefore, the City should decrease laneage on certain roads in an effort to promote greater mobility through walking, biking, and driving. In most cases, this strategy requires little cost as the City need only

re-stripe existing infrastructure. For example, permitting on-street parking along Exeter Road transforms the road into a multi-purpose avenue conducive to shopping, walking, or otherwise traveling through. The parking provides easy access to street-fronting stores (proposed in the Superblock concept) while giving pedestrians a buffer between traffic and the sidewalk. Furthermore, the parking also encourages other cars to travel at lower speeds, making the street safer for bicyclists and thus making the overall environment more agreeable to non-motorized activities.

Candidates for "road diets" include: Exeter (4 lanes to 2), Neshoba (4 lanes to 2), West Farmington (6 lanes to 4), and West Street below Poplar Avenue (4 lanes to 2, once the City reconnects Germantown Road).



Narrow lanes & planted medians: Increased safety and aesthetic value



Modifications to the existing roadway network will result in changes to the overall LOS in the study area. For the roadway improvements mentioned above, the consultants conducted analyses using 2003 overall traffic volumes, which reflect the existing land use conditions. [Redevelopment of the study area with higher densities and mixed-uses will impact the traffic volumes and intersection LOS. Therefore, as land-use patterns change, the City should perform additional impact analyses using more recent data to gauge the transportation network's needs.]

The table at right details the expected intersection LOS for the proposed roadway modifications and existing land uses.

### ADDITIONAL TRANSPORTATION IMPROVEMENTS

The map found at the beginning of the "Proposed Improvements" section provides a graphic representation of suggested transportation changes in the study area. It illustrates several of the ideas listed in this section of the report.

- **Improve connectivity within the study area.** By connecting more roads the City offers people a variety of transportation routes, dispersing traffic across multiple roads and streets rather than concentrating all movements on a few congested thoroughfares. In turn, this strategy allows for many streets within the area to take on a "local context," meaning that they serve as more than just auto-dominated corridors. While still functioning appropriately as roadways, the streets also serve as safe avenues for walking, living, doing business, or gathering. People may even choose to accomplish their errands by walking or biking along these streets, further improving roadway conditions for vehicles by removing local trips from major corridors.

Example streets include: A new north-south "Main Street" running through the central commercial block from Poplar Avenue to Farmington Road, possibly extending into the Municipal Block with mid-block streets connecting to Exeter Road; a mid-block street between West Street and Germantown Road connecting to the hospital; multiple local streets to connect West Street to any development that takes place on the Arthur Tract; and low-speed streets through the Municipal Block.

- **Provide facilities for non-motorized transportation throughout the study area.** As the City undertakes measures to alleviate its overburdened streets, it must consider the inclusion of non-motorized transportation facilities downtown. Complementary features such as low-speed, interconnected streets and on-street parking create an environment conducive to walking and biking.

The City should also closely examine the area's key intersections and crossings. The Transportation Facilities Map (shown at the section's beginning) identified critical pedestrian crossings that the City needs to designate with appropriate signage (for motorists) and markings (for pedestrians). Clear design will help to reduce uncertainty among motorists and non-motorists at conflict points by explicitly

## Proposed Network Intersection Level of Service

Intersection	Traffic Operation	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec.)	LOS	Delay (sec.)
Germantown Road & (West) Farmington Boulevard	Signalized	C	22.9	D	36.8
Exeter Road & Farmington Boulevard	Signalized	B	14.1	C	28.0
Exeter Road & Poplar Avenue	Signalized	C	23.4	B	14.6
Germantown Road & Poplar Avenue	Signalized	C	30.5	D	52.0
West Farmington Boulevard/ West Street & Poplar Avenue	Signalized	C	31.2	B	18.1
West Street/ North Street & Poplar Avenue	Signalized	B	12.9	C	23.5
Germantown Road & Poplar Pike	Signalized	B	13.6	C	20.5



Pedestrian markings



Low-speed, multi-purpose street, FL



A Main Street, Cambridge, MA



Multi-use path

demarcating rights of way and coordinating movements. Features include appropriately-timed pedestrian signals, adequately striped or distinguished crosswalks, wheelchair facilities, median refuges, signs alerting motorists to pedestrian movements (and vice versa), and pedestrian-controlled signaling methods. While many of these changes refer to existing intersections, the City should also investigate sites to place non-motorized crossing facilities at specific mid-block points. The high school and hospital, where pedestrian movements remain high, are two places for such provisions.



Asphalt treatment on crosswalk, Newport Beach, CA



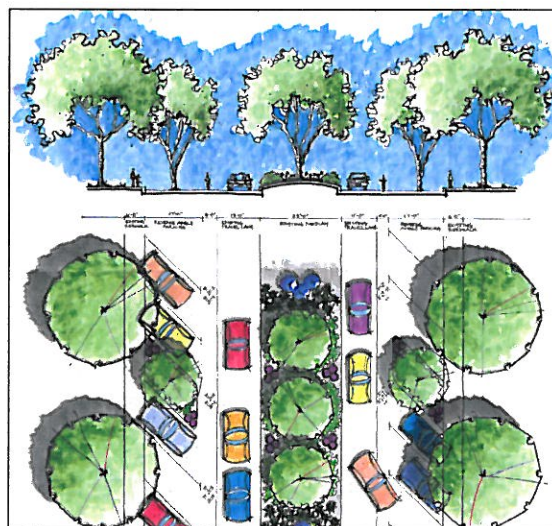
■ **Encourage on-street parking.** Local streets represent the best context for this feature, which helps to slow traffic and increase perceptions of safety among pedestrians. The City should promote this practice within the study area, especially as Germantown aims to reach its goals of increased density, residential opportunities, and non-motorized mobility downtown.

A range of on-street parking models exist (namely parallel, angled, and reverse angle parking). The consultant believes the City should explore reverse angle parking as the preferred option, where appropriate. This practice involves drivers pulling in front of the intended parking space and backing into the space without the need to straighten an alignment, as parallel parking requires. Benefits of this approach include: Clear sight-lines for exiting drivers (with other drivers and bicyclists, too), convenient sidewalk access to trunks for loading, and open door positions that direct pedestrians back towards the sidewalk and not the street (especially young children).

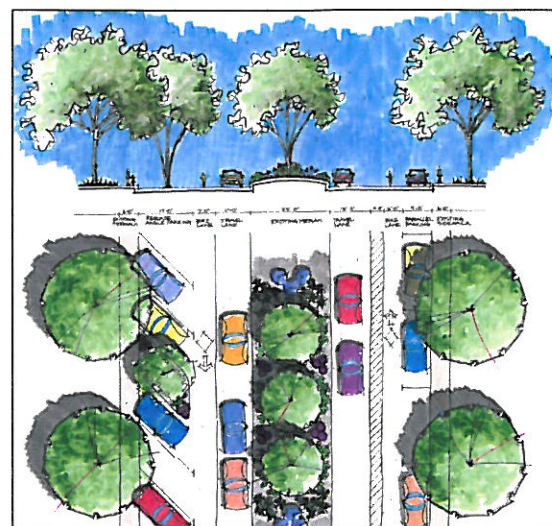
■ **Incorporate functional aesthetics into street design.** With the proposed lane reductions on several streets, the City should integrate street-enhancing designs into the roadways. Features such as street trees, landscaping, and medians all provide aesthetic value to an area while also serving to increase the safety and longevity of an environment. For instance, street trees create a “vertical element” that informally cues drivers to decrease their travel speeds, resulting in 5% to 20% fewer crashes on some roads (*New Urban News*, Vol. 11 No. 6). They also give shade to roadways, a benefit that studies show extends asphalt life by 40% to 60% (Burden “22 Benefits of Street Trees” [http://www.walkable.org/download/22\\_benefits.pdf](http://www.walkable.org/download/22_benefits.pdf)).

Other practices like medians have dual functions. Medians offer places to plant vegetation which, in addition to the aforementioned benefits, helps control run-off. This greatly undervalued role actually saves cities millions of dollars on expensive waste-water management facilities and replenishes natural water systems with purified rain water.

Likewise, at intersections and mid-block locations “median refuges” provide a safe half-way point for pedestrians. This proves especially relevant to Germantown’s intersections, which often span 5 to 8 lanes. By giving pedestrians a safe place to wait mid-way, the median refuge enables persons to cross large roadways in two segments. Moreover, it improves both vehicular flow and pedestrian movements. Pedestrian signal timings may be reduced to encourage persons to cross in two parts, thus limiting their exposure on the road and allowing vehicular traffic to spend less time idling at lights.



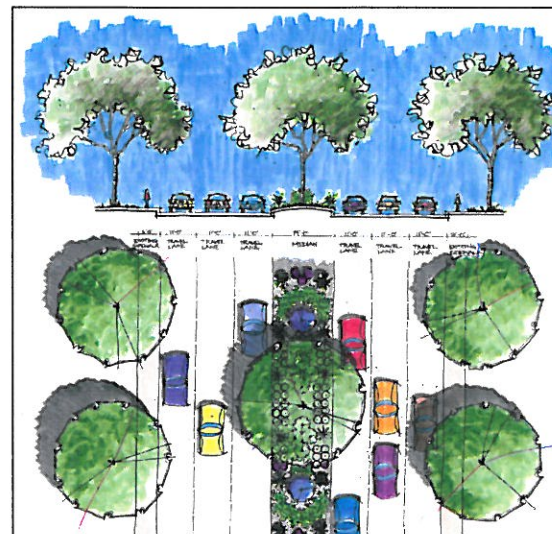
Exeter Road Option A: Reverse angle parking & bike lanes



Exeter Road Option B: Re-verse angle & parallel parking with bike lanes



Proposed Germantown Road street-section with planted median, reduced lane widths, and a planting strip between the road and sidewalk—all features which increase efficiency without diminishing capacity.



Proposed Poplar Avenue street section with planted median and reduced-width travel lanes.



As the facilities map illustrates (page 24), several area intersections need substantial improvements. Many of these features have been discussed on previous pages; however, some additional issues remain.

■ **Re-design intersection facilities.** Specifically, the City should consider turn lane reductions at intersections where road narrowing occurs. A local street needs only a right and left turn lane per direction at most intersections. The proposed local street network further emphasizes this point. Multiple travel routes disperse traffic over several streets and free intersections from excessive congestion. This design effectively moves traffic and offers non-motorized pedestrians a more hospitable environment in which to interact. Fewer lanes makes it easier (and quicker!) for pedestrians to cross by reducing both distance and potential conflict points with motorists.

■ **Enhance intersections.** Currently, many of Germantown's roadways remain sparse and barren: especially the main corridors. A visitor driving through the City may never realize that they passed through the City. Given these issues, the plan recommends gateway treatments for certain intersections. Prominent locations include: Germantown/Neshoba and Poplar/Exeter, Poplar/Miller Farm, Poplar/Germantown intersections. Other proposed intersections along the new Main Street (discussed later) offer similar opportunities.

The City should investigate distinguishing treatments for intersections. Citizens at the charrette explained that Germantown needed "a defined entrance/exit to the City center." Oftentimes, inexpensive procedures like staining/imprinting asphalt surfaces create distinctive impressions. Combined with landscaping, fountains, or public art, the features define a site and create a sense of place. This page depicts potential place-defining improvements to intersections and roadways.



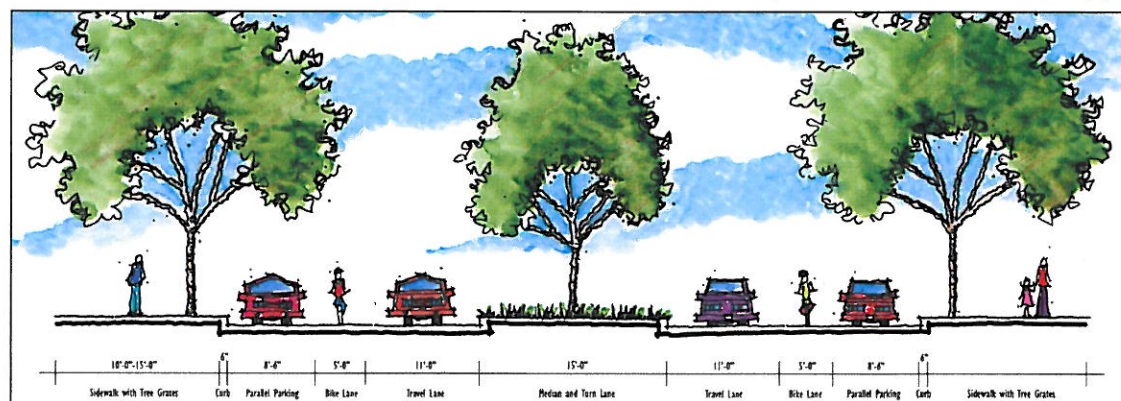
Proposed intersection improvements at Poplar Avenue-Exeter Road intersection



Proposed pedestrian-friendly intersection design for Poplar Avenue at new Main Street



Refuges enhance mobility for all users and offer planting spaces



West Street Re-design: Street trees provide aesthetic and environmental benefits while on-street parking and bike lanes create a safer environment for all users.



Proposed street section for Neshoba Road